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Survey of the Testing Procedures Used for Initial Employment of Stenographers

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Thesis

SURVEY OF THE TESTING PROCEDURES USED
FOR INITIAL EMPLOYMENT OF STENOGRAPHERS

Submitted by

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CHAPTER I
INTRODUCTION

Statement of the Problem

The purpose of this study was to determine the testing and employment procedures used for the initial employment of stenographers in some of the leading business firms in the Boston area. The data obtained should be helpful to business teachers and to business firms interested in improving their employment procedures.

Analysis of the Problem

The subordinate problems involved in the major problem were:

1. To determine background information about the employment procedures used in the initial employment of stenographers.
2. To determine whether or not any written examinations were given to the applicants for stenographic positions at the time of the study.
3. To determine the types of tests administered, particularly with regard to the contents of such tests.

4. To determine the factors considered in the employment of a stenographic applicant.
5. To determine the amount of emphasis placed on the results of the tests in selecting the stenographers for employment.

Justification of the Problem

The writer hoped that by determining the present testing procedures of some of the leading business firms in the Boston area, information would be available concerning the training that should be given to prospective stenographic applicants and the type of individual who would make a satisfactory stenographer. Information obtained through a study of the employment procedures of the business firms surveyed should aid in establishing a tentative program in other business firms. By means of this survey the business teacher can include in the training program experiences that will fit more precisely the applicant for a stenographic position.

John H. MacDonald¹ points out that ever since the First World War an increasing amount of attention has been given to the development of tests designed to show whether the applicant is fitted, not only by training and experience, but also

¹Mac Donald, John H., Office Management, Prentice-Hall, Inc., New York, 1946, p. 505.

physically and mentally, to perform the duties of the position for which application is being made.

In his article, "Integrated Employment Procedures," D. M. Neville¹ states that pre-employment tests are a valuable tool in selection and placement because they provide a method of comparing individuals that is not based wholly on opinion. At the present time pre-employment tests are used for the selection of both men and women.

More and more businessmen have used testing devices to complement employment interviews of applicants for stenographic positions. Mathilde Hardaway and Thomas B. Maier² point out that in a 1947 survey by the National Office Management Association over one-third of the replying companies indicated that they had introduced employment testing within the preceding four years. The employment officials of these companies found that they can determine from the interview something about an individual's ability to fit into their office situation. They have found, however, that they cannot predict accurately, without resorting to testing, what kind of work an individual can do.

¹Neville, D. M., "Integrated Employment Procedures," American Business Education, Eastern Business Teachers Association, October 1953, p. 25.

²Hardaway, Mathilde and Maier, Thomas B., Tests and Measurements in Business Education, South-Western Publishing Co., New Rochelle, 1952, p. 8.

In regard to the necessity for testing procedures in employment, Mathilde Hardaway and Thomas B. Maier state the following:¹

Employment tests should form the keystone around which the employment procedure is built. In addition to a well-developed testing program, employers should seek the recommendations of the business teachers of the applicants, and they should interview each applicant according to a planned procedure.

Scope of the Study

The purpose of this study was to determine the testing and employment procedures used for initial employment of stenographers in 160 leading business firms in the Boston area. All of these business firms employed 500 or more wage earners and were not engaged in any one particular type of business.

The second chapter presents a review of some of the literature in this field.

¹Ibid., p. 288.

CHAPTER II

REVIEW OF RELATED LITERATURE

The area of stenographic testing procedures presents an open field for continued research.

The Peirce School in Philadelphia conducted a survey of personnel practices including the use of tests in employment procedures. This survey was described as follows:¹

. . . a survey of the personnel practices of 254 companies employing an aggregate of 202,922 office employees. Of these companies 140 (55%) indicated that selection tests were used as the basis of employment, 114 (45%) that they were not used. Of the companies using tests, 10 used them exclusively in selection, and 130 to a limited extent.

In summarizing this same survey, Harry L. Wylie and Robert P. Brecht² state that only 26 per cent of the companies which were surveyed used tests as a means of selecting employees for promotion. From 40 to 60 per cent of the companies surveyed used the same kind of tests in employment procedures. There was little growth in the use of tests from 1935 to about 1945 when their use started to increase.

¹Eldridge, Lois W., Methods of Testing Applicants For Entry Into Stenographic Positions, Master's Thesis, Boston University, 1948, p. 13.

²Wylie, Harry L. and Brecht, Robert P., Office Organization and Management, Prentice-Hall, Inc., New York, 1947, p. 217.

Lois W. Eldridge mentions another small survey¹ which was made in 1935.

The Office Management Association of Chicago conducted a survey of 107 companies which showed that 66 (62%) did not and 41 (38%) did use intelligence or trade tests. Of the latter group 26 used trade tests only; 14, intelligence and trade tests; and 1, intelligence tests only.

A Joint Committee of the National Office Management Association and the Eastern Commercial Teachers Association undertook a research study in 1935 which extended to 1937. This study is related to pre-employment testing methods. In this study, testing practices in both schools and business firms were investigated so that a national program of vocational tests might be established.

A questionnaire covering tests used for the specific office occupations including stenographers was distributed to 140 members of the National Office Management Association to determine testing practices used among employers.

The results of this survey were as follows:²

Forty-seven replies were received. Of this number twenty-seven reported the use of tests on some or all of the selected occupations; twenty reported the use of no tests. The slimness of the sample and its definite bias in favor of tests reduce its significance as an indicator of the testing practices generally followed in commerce and industry.

Of the twenty-seven companies reporting the use of tests, twelve utilized specific ability or trade tests only.

¹Eldridge, loc. cit.

²Ibid., p. 16.

All of the remaining companies used a general aptitude test for two or more of the selected occupation. Two depend upon this type of measure alone; three use supplementary specific ability or trade tests combined with a measure of related capacities which make for success on the job; and ten combine the general aptitude with trade tests.

Stenographers are subjected to tests for the discovery of their knowledge of sentence structure, ability to follow directions, breadth of vocabulary, and alertness in the use of words; tests for punctuation, spelling and vocabulary.

The National Office Management Association in the New England Area conducted a survey¹ which disclosed that most offices have no definite testing program beyond dictating one or two short letters to the applicant to be transcribed immediately.

A study in 1948 by the National Office Management Association of Chicago showed the following practices of testing being used by the leading business firms in Chicago:²

Fifty-nine companies stated they now have testing programs which have been in effect from one month to twenty-five years, with an average of five and one-half years. Fourteen companies did not state the length of time their program had been in effect.

Of the firms that answered the questionnaire, sixty do not have a testing program and never have had. Five companies abandoned testing because of recruitment problems, lack of testing facilities, ineffective results, and the fact that the quality of the work did not come up to the test.

¹Joint Committee Report, Present School Practices in Vocational Ability Testing, Tenth Yearbook, Eastern Commercial Teachers Association, 1937, p. 142.

²Ross, Myron D., "The Use of Employment Tests in Hiring Office Employees in Chicago," The Balance Sheet, South-Western Publishing Co., December 1948, pp. 179-180.

Forty-four companies reported that their testing program had been installed by themselves, and ten reported that it had been installed by an outside company. Fifty-four firms administer their own tests. Fifty firms score and interpret their own tests while one does not.

CHAPTER III
METHOD OF PROCEDURE

The following procedure was employed in conducting this survey of methods used for the initial employment of stenographers:

1. Research studies and literature were studied to obtain a background for the study.
2. The procurement was made of names of business firms in which it was believed some methods of pre-employment testing of stenographic applicants were used.
3. A check list was constructed to be used as a means of gathering data pertinent to the study of testing procedures used in the initial employment of stenographers.
4. A statement of approval was obtained from the Chairman of the Boston Chapter of the National Office Management Association for use in the letter of transmittal.
5. The letter of transmittal was constructed.
6. One hundred sixty check lists together with letters of transmittal were sent to the personnel directors of business firms in the Boston area.

7. Follow-up cards were sent to the business firms which failed to return the check list.
8. The data obtained from the check lists were tabulated and analyzed.
9. Summary, conclusion, and recommendations were written based upon the findings of the study.

Procedure Followed in Selecting Business Firms Represented in the Survey

Copies of the Directory of the Larger Manufacturers in the Boston Industrial District and the membership roster of the Personnel Managers Club were obtained from the Boston Chamber of Commerce. The firms were selected according to the number of wage earners. Selection was made of those business firms employing 500 or more wage earners.

Procedure Used in Building the Check List

The check list consisted of three pages. The questions were worded to facilitate simplicity of response. The majority of the items could be answered by a check mark or by a very brief statement in order that the filling out of the check list would not be time consuming.

The survey report form was constructed to reveal the following information:

1. The total number of permanent office workers employed by the company.
2. The method used in selecting the applicants for stenographic positions.
3. Whether or not formal tests were used in determining the employment of stenographers.
4. Types of tests used by the firm in determining employment of stenographers.
5. What subjects were included in the tests.
6. The number of different types of tests given the stenographic applicant.
7. When tests as a means of determining employment were introduced.
8. What changes have been introduced in company-made tests and when the changes were put into effect.
9. Whether or not the stenographic applicant was allowed to take another battery of tests upon failing the first battery administered.
10. The position held by the person administering the tests.
11. Whether employment test standards and on-the-job standards set for stenographers were the same.

12. How much actual emphasis was placed on the results of the tests in determining the employment of a stenographer.
13. To what extent particular tests were successful in predicting the quality of work of the stenographic applicant.
14. The importance of various factors in considering a stenographic applicant for employment.

Preparation of the Letter of Transmittal

A request was made of and granted by the Research Chairman of the Boston Chapter of the National Office Management Association for permission to include a statement in the letter of transmittal. The statement mentioned that the Chairman of the Research Committee of the Boston Chapter of the National Office Management Association had examined the check list and suggested that it be given wholehearted support. The writer felt the number of responses received would be greatly increased by the use of a statement of this kind in the letter of transmittal.

CHAPTER IV
ANALYSIS OF THE SURVEY

The data of the survey were based upon 98 replies received from a check list mailed to business firms in the Boston area. Of the 160 business firms surveyed, 98, or 61 per cent, replied.

The tabulations shown in Table I were arranged so that the data showed the extent to which large and small companies use formal tests in determining the employment of stenographers.

The number of office workers employed ranged from 24 companies employing under 100 to six companies employing over 1500 office workers. Seventy-nine, or 81 per cent, of the 98 business firms surveyed made adequate replies, while nineteen of the replies could not be tabulated because of the incomplete answers regarding the number of their permanent office workers.

Forty-seven, or 48 per cent, of the companies used formal tests in determining the employment of stenographers, while 45 companies did not use formal tests. Six companies failed to answer.

TABLE I
 CLASSIFICATION OF BUSINESS FIRMS ACCORDING TO THE NUMBER OF
 PERMANENT OFFICE WORKERS AND FORMAL TESTS USED

Permanent Employees	Number Of Firms	Per Cent	Formal Tests					
			Yes	Per Cent	No	Per Cent	No Reply	Per Cent
Under 100	24	24.49	8	8.17	15	15.31	1	1.02
101 - 200	15	15.31	9	9.19	6	6.12	0	0
201 - 300	10	10.21	4	4.08	6	6.12	0	0
301 - 400	4	4.08	1	1.02	3	3.06	0	0
401 - 500	3	3.06	2	2.04	1	1.02	0	0
501 - 600	4	4.08	3	3.06	1	1.02	0	0
601 - 700	2	2.04	1	1.02	1	1.02	0	0
701 - 800	2	2.04	2	2.04	0	0	0	0
801 - 900	2	2.04	0	0	2	2.04	0	0
901 - 1,000	1	1.02	1	1.02	0	0	0	0
1,001 - 1,100	2	2.04	1	1.02	1	1.02	0	0
1,101 - 1,200	1	1.02	1	1.02	0	0	0	0
1,201 - 1,300	1	1.02	1	1.02	0	0	0	0
1,301 - 1,400	0	0	0	0	0	0	0	0
1,401 - 1,500	2	2.04	1	1.02	1	1.02	0	0
Over 1,500	6	6.12	6	6.12	0	0	0	0
No Reply	19	19.39	6	6.12	8	8.17	5	5.10
Total	98	100.00	47	47.96	45	45.92	6	6.12

The first item on the check list concerned the methods used in selecting applicants for stenographic positions. Six different methods appeared in the final tabulation. (Table II)

TABLE II
METHODS USED IN SELECTING
APPLICANTS FOR STENOGRAPHIC POSITIONS

Method	Number Of Firms	Per Cent
Schools	81	82.65
Applications	76	77.55
Recommended by Company Employees . . .	76	77.55
Employment Agencies	67	68.37
Recommended by Friends	66	67.35
Newspaper Advertisements	51	52.04
No Reply	9	9.18

Eighty-one, or 83 per cent, of the business firms used the Schools as a means of selecting the applicants for stenographic positions. Seventy-eight per cent of the business firms made selection by means of having the applicants Recommended by Company Employees and by Applications. The fourth method was by means of Employment Agencies as checked by 68 per cent of the business firms. Of the business firms

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responding to this item, 67 per cent checked Recommended by Friends and 52 per cent used Newspaper Advertisements. Nine of the 98 business firms made no reply. Although provision was made on the check list for the stating of other methods for selecting applicants for stenographic positions, no significant comments were made.

The tabulation of the responses given to the question concerning the type of tests used showed that Company-Made Tests were used by more firms than any other type of test. Forty firms checked the use of Company-Made Tests. A detailed breakdown of the specific tests used by each company is given in Table III.

There appeared to be only two firms giving the same combination of tests. Firm 46 and firm 48 both gave a Clerical Aptitude Test and an Intelligence Test as is shown on Table III. Nineteen of the firms used both the Clerical Aptitude Test and Intelligence Test. Next in popularity was the Achievement Test. The Aptitude Test and Personality Test were both checked by eleven firms. Only four firms used the Mechanical Aptitude Test; two firms, the Interest Test; one firm, the Reading Test. Of the three firms checking Other tests given, only two indicated the type test given, namely, the Martin Vocabulary Test and a proficiency test.

TABLE III
TYPES OF TESTS USED BY FIRMS SURVEYED

	Achievement Test	Aptitude Test	Clerical Aptitude Test	Intelligence Test	Interest Test	Mechanical Aptitude Test	Personality Test	Reading Test	Company-Made Test	Others
Firm 1			X						X	
Firm 2									X	
Firm 3			X	X	X	X	X			X
Firm 4									X	
Firm 5									X	
Firm 6									X	
Firm 7									X	
Firm 8									X	
Firm 9									X	
Firm 10			X	X					X	
Firm 11									X	
Firm 12									X	
Firm 13									X	
Firm 14									X	
Firm 15									X	

TABLE III (continued)

	Achievement Test	Aptitude Test	Clerical Aptitude Test	Intelligence Test	Interest Test	Mechanical Aptitude Test	Personality Test	Reading Test	Company-Made Test	Others
Firm 16	X									
Firm 17				X					X	
Firm 18			X				X		X	
Firm 19	X		X	X			X			
Firm 20		X				X	X			
Firm 21			X	X		X				X
Firm 22				X						
Firm 23									X	
Firm 24	X		X	X						
Firm 25			X	X					X	
Firm 26		X	X	X				X		
Firm 27									X	
Firm 28		X	X						X	
Firm 29	X								X	
Firm 30									X	

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TABLE III (continued)

	Achievement Test	Aptitude Test	Clerical Aptitude Test	Intelligence Test	Interest Test	Mechanical Aptitude Test	Personality Test	Reading Test	Company-Made Test	Others
Firm 31	X	X	X				X		X	
Firm 32	X			X			X		X	
Firm 33		X							X	
Firm 34									X	
Firm 35	X								X	
Firm 36	X			X					X	
Firm 37									X	X
Firm 38				X	X				X	
Firm 39	X						X		X	
Firm 40	X								X	
Firm 41		X	X						X	
Firm 42		X					X		X	
Firm 43			X	X					X	
Firm 44									X	
Firm 45				X					X	

TABLE III (continued)

	Achievement Test	Aptitude Test	Clerical Aptitude Test	Intelligence Test	Interest Test	Mechanical Aptitude Test	Personality Test	Reading Test	Company-Made Test	Others
Firm 46			X	X						
Firm 47			X	X			X		X	
Firm 48			X	X						
Firm 49		X	X							
Firm 50	X			X						
Firm 51		X	X	X			X		X	
Firm 52		X								
Firm 53	X									
Firm 54		X					X			
Firm 55			X			X				
Firm 56									X	
Total	12	11	19	19	2	4	11	1	40	3

A few of the firms indicated what type of test was made by the company. Here are some of the fields covered by the company-made tests:

Arithmetic	Shorthand
Comptometer	Spelling
Filing	Transcription
Punctuation	Typing

In general the firms did not submit very much data concerning the types of tests they used in their testing procedures for the initial employment of stenographers.

The subjects included in the tests and the number of business firms using each of the subjects are indicated in Table IV.

The subject leading in the list was Typing with 60, or 61 per cent, of the business firms replying making use of typing in their tests. Following close behind was Shorthand Transcription with 53 of the firms checking this subject. Thirty of the firms used both Spelling and Vocabulary; 23 firms, English and Grammar; 17 firms, Business Math; 13 firms, Filing; 11 firms, Office Machines; and 5 firms reported the use of Bookkeeping in their tests. Business Law and Economics received no response as subjects included in the tests given to determine the initial employment of stenographers. Eighteen of the companies indicated that other subjects were included in their tests but only eight made any reference as to what these other subjects or topics were. The eight

subjects listed were general facility with figures, behavior and temperament, aptitude for clerical details, policy typing, number and name computation, number perception, general ability, and ability to read handwriting.

TABLE IV
SUBJECTS INCLUDED IN THE TESTS

Subject	Number Of Firms	Per Cent
Typing.	60	61.22
Shorthand Transcription	53	54.08
Spelling.	30	30.61
Vocabulary.	30	30.61
English and Grammar	23	23.47
Business Math	17	17.35
Filing.	13	13.27
Office Machines	11	11.22
Bookkeeping	5	5.10
Business Law.	0	0
Economics	0	0
Others (see context).	18	18.37
No Reply.	36	36.73

Table V indicates the number of companies that introduced the use of tests within a certain period of years as a criteria for determining the employment of stenographers.

TABLE V
WHEN THE USE OF TESTS WAS INTRODUCED
BY BUSINESS FIRMS

Period	Number Of Firms	Per Cent
1920 - 1925.	1	1.02
1926 - 1930.	2	2.04
1931 - 1935.	4	4.08
1936 - 1940.	4	4.08
1941 - 1945.	6	6.13
1946 - 1950.	25	25.51
1951 - 1953.	6	6.12
No Reply	50	51.02
Total	98	100.00

The responses to the question concerning when the use of tests was introduced as a criteria for determining the employment of stenographers showed a wide variance. There was a great increase in the use of tests during the five-year period between 1946 to 1950. There did, however, appear to be a steady increase in the use of tests from 1920 to 1950. Only one per cent of the companies replying to this question introduced tests in the period of 1920 to 1925 as a criteria for determining the employment of stenographers while 25 companies reported the introduction of tests during the period of 1946 to 1950.

Table VI shows the revisions and anticipated changes to be made on the company-made tests. The answers tabulated in this table are those given by the 49 firms stating that company-made tests were used in their selection of stenographers.

TABLE VI
CHANGES MADE AND BEING CONSIDERED BY BUSINESS FIRMS
FOR COMPANY-MADE TESTS

Question	Yes	Per Cent	No	Per Cent	No Reply	Per Cent
Have company-made tests been revised since they were introduced?	26	53.06	23	46.94	0	0
Are any changes being considered for company-made tests?	15	30.61	32	65.31	2	4.08

Twenty-six, or 53 per cent, of the business firms have revised the company-made tests since they were introduced while 23, or 47 per cent, have not made revisions. As to whether or not any changes were being considered for company-made tests, 15, or 31 per cent, replied in the affirmative and 32, or 65 per cent, in the negative. Four per cent of the business firms failed to reply.

In answer to the question as to whether the applicant was given a definite time limit for completing the battery of tests for stenographic employment, 22 per cent replied

in the affirmative, 34 per cent in the negative, and 44 per cent failed to answer. (Table VII)

TABLE VII
TIME LIMIT FOR COMPLETING BATTERY OF TESTS

Whether Time Limit Was Given On Tests	Number Of Firms	Per Cent
Negative	22	22.45
Affirmative	33	33.67
No Reply	43	43.88
Total	98	100.00

The next question, concerning the length of time given to complete the battery of tests for stenographic employment, did not lend itself to tabulation. The indefiniteness in the answers made it impossible to tabulate with any degree of accuracy.

Table VIII discloses whether or not the applicant was allowed to take another battery of tests upon failing the first battery of tests administered.

Twenty-six of the business firms allowed the applicant to take another battery of tests, while 24 of the business firms did not allow the applicant to repeat the tests. No reply was received from 48 of the business firms that were surveyed.

TABLE VIII
 WHETHER APPLICANT IS ALLOWED TO TAKE
 ANOTHER BATTERY OF TESTS

Whether Applicant is Allowed to Take Another Battery of Tests Upon Failing the First Battery Administered	Number Of Firms	Per Cent
Affirmative	26	26.53
Negative	24	24.49
No Reply	48	48.98
Total	98	100.00

Closely related to the preceding question in regard to whether or not the applicant is allowed to take another battery of tests was the question, "If the applicant is allowed to take another battery of tests, how long must he wait before he can take the tests again?" As shown in Table IX, 20 per cent required no limitation on time, while 6 per cent required a limitation of from one to twelve months.

When questioned as to whether employment test standards for the initial employment of stenographers are the same as the standards required on the job, 36 of the business firms replied in the affirmative, four firms indicated that the employment test standards were higher, while 23 firms said on-the-job standards were higher. (Table X)

TABLE IX
 TIME LIMIT REQUIRED BEFORE SECOND BATTERY
 OF TESTS CAN BE TAKEN

Period of Time	Number Of Firms	Per Cent
1 - 3 months	2	2.04
4 - 6 months	3	3.06
7 - 9 months	0	0
10 -12 months	1	1.02
No Limitation	20	20.41
No Reply	72	73.47
Total	98	100.00

TABLE X
 COMPARISON OF EMPLOYMENT TEST STANDARDS
 WITH ON-THE-JOB STANDARDS

Comparison	Number Of Firms	Per Cent
Yes, the standards are the same.	36	36.73
No, the employment test standards are higher.	4	4.08
No, the on-the-job standards are higher.	23	23.47
No Reply	35	35.72
Total	98	100.00

Despite the intensive and varied pre-employment testing given by some of the business firms, the survey indicated that employment of stenographers was based chiefly on the employment interview by 45 per cent of the business firms replying. Twenty-nine per cent of the firms replied in the negative. No reply was received from 27 per cent of the firms. (Table XI)

TABLE XI
WHETHER EMPLOYMENT OF STENOGRAPHERS IS BASED
CHIEFLY ON EMPLOYMENT INTERVIEW

Is Employment Based Chiefly on the Employment Interview?	Number Of Firms	Per Cent
Affirmative	44	44.90
Negative	28	28.57
No Reply	26	26.53
Total	98	100.00

However, as shown by Table XII 36 per cent of the companies replying to the survey placed a great deal of emphasis upon the results of the tests in determining the employment of stenographers. Some emphasis was placed on the results of the tests by 26 per cent of the firms, 2 per cent indicated very little emphasis was placed on the test results. No answer was received from 37 per cent of the business firms surveyed.

TABLE XII
EMPHASIS PLACED ON TEST RESULTS

How Much Emphasis is Placed Upon the Results of the Tests in Determining Employment of Stenographers?	Number Of Firms	Per Cent
Great Deal	35	35.72
Some	25	25.51
Very Little	2	2.04
No Reply	36	36.73
Total	98	100.00

When questioned as to how the employment of stenographers was determined, 55 per cent of the personnel managers answered that the selection was made from the combination of the results of the tests, interviews, school records, and references, while none of the personnel managers determined employment by the results of the tests only. (Table XIII)

The results of the tests were considered to a great extent by 27 per cent of the personnel directors in predicting the quality of work of the stenographic applicant. However, 35 per cent of the personnel directors considered the results to some extent. Only 3 per cent considered the test results of very little importance. (Table XIV)

TABLE XIII
HOW EMPLOYMENT OF STENOGRAPHERS IS DETERMINED

Method of Determining Employment	Number Of Firms	Per Cent
Results of Test Only	0	0
Results of Tests and Interview	10	10.21
Results of Tests, Interview, and School Record	5	5.10
Results of Tests, Interview, School Record, and References	54	55.10
No Reply	29	29.59
Total	98	100.00

TABLE XIV
EXTENT TO WHICH RESULTS OF TESTS ARE SUCCESSFUL
IN PREDICTING QUALITY OF WORK

To What Extent do You Believe the Results of the Test Are successful in Predicting the Quality of Work of the Stenographic Applicant?	Number Of Firms	Per Cent
Great Extent	26	26.53
Some Extent	34	34.70
Very Little	3	3.06
No Opinion As Yet	1	1.02
No Reply	34	34.69
Total	98	100.00

Fifty-seven, or 58 per cent, of the business firms failed to answer the question of what type of tests worked best for their company in predicting success on the job of the stenographic applicant. Because of the indefiniteness of the answers that were received from 41, or 42 per cent, of the personnel directors, it was not possible to put these answers in tabulated form. The personnel directors in general felt that the tests they were using at the time of the survey were the best for predicting the success on the job of the stenographic applicant. A number of the personnel directors felt they were unable to answer this question because of uncertainty on their part.

The last part of the three-page check list was devoted to a list of thirteen factors and how the personnel directors would classify the results of these factors in considering a stenographic applicant for employment. The complete tabulation of these data is contained in Table XV.

The check list was arranged so that the respondent could indicate which factors were considered Very Important, Moderately Important, or of Little or No Importance. In the last column provision was made for tabulating the number of business firms which did not reply to this question. A number of the business firms did not indicate their classification of the first ten factors since they were in regard to testing factors, and a number of the business firms, as

TABLE XV

CLASSIFICATION OF CERTAIN FACTORS IN CONSIDERING STENOGRAPHIC APPLICANTS FOR EMPLOYMENT

Factor	Very Important	Per Cent	Moderately Important	Per Cent	Little Importance	Per Cent	No Reply	Per Cent
Achievement Test.	10	10.20	14	14.29	1	1.02	42	42.86
Aptitude Test	12	12.24	9	9.18	5	5.10	41	41.84
Clerical Aptitude Test.	15	15.31	20	20.41	3	3.06	32	32.65
Individual Subject-Matter Test.	5	5.10	10	10.20	7	7.14	45	45.92
Intelligence Test	15	15.31	20	20.41	2	2.04	30	30.61
Interest Test	4	4.08	10	10.20	6	6.12	47	47.96
Mechanical Aptitude Test.	4	4.08	4	4.08	14	14.29	45	45.92
Personality Test.	15	15.31	14	14.29	2	2.04	36	36.73
Reading Test.	7	7.14	10	10.20	3	3.06	47	47.96
Test Designed by the Company. .	22	22.45	13	13.27	0	--	32	32.65
Recommendation of Interviewer .	41	41.84	13	13.27	1	1.02	12	12.24
Recommendation of School.	34	34.69	22	22.45	2	2.04	11	11.22
Recommendation of References. .	31	31.63	17	17.35	5	5.10	14	14.29
Other Recommendations	2	2.04	1	1.02	1	1.02	0	--

indicated in Table I, did not use formal tests in their selection of stenographic applicants. This accounted for the lack of replies from so large a number of business firms on their classification of these first ten factors.

Space was provided at the end of the check list for any comments or suggestions that the personnel directors might wish to make in regard to preparing students for the business world.

Some of the more interesting comments are given below:

We use only a one-page sheet of typing material to judge typing speed and accuracy. A letter is also dictated to determine shorthand competence. No formal scoring is done. Time elapsed and errors are noted in the typing and the dictation test. This gives us a rough picture of the applicant's ability and is taken into consideration in the overall evaluation of the applicant.

More emphasis should be placed on spelling, grammatical construction, machine transcription, and English.

Tests no doubt are necessary but from experience not essential. Many of our office workers start on simplified work, and the ability they show becomes the primary criteria for advancement to stenographic and then secretarial positions.

We do not have any formal test that is given to all applicants; instead we use an actual letter that has been dictated previously by the person for whom the applicant will work.

The tests have been validated by having employees on the job complete the test battery before we use them in screening applicants.

The school should emphasize accuracy--NOT SPEED.

I do not believe that before a girl is offered a job the concern should say she must write shorthand 70 to 125 words a minute and type at a set number of words per minute. I believe tests are workable for some concerns which have the technical help and personnel departments to handle them. In noting some of the tests given, one would be led to believe that the concern was hiring an executive instead of a typist or stenographer.

We find that errors in spelling and punctuation are more frequent than any other type of error.

The importance of tact and maturity should be emphasized in school. In general, the total personality picture stands out as being of pre-dominate importance.

The typing ability of most applicants is unsatisfactory even from the best schools and even though our lowest salary is \$50 for just typing.

I do not feel that any attempt should be made by teachers to prepare students specifically for "tests" to be used in business. A student with good skills--spelling, grammar, typing, shorthand--and an average intelligence level should have no trouble with business or with its "tests."

I would suggest a more concentrated study of spelling and grammar. Most applicants for stenography are fine in typing and shorthand but know very little about punctuation and spelling.

Seldom do we hire stenographers for an initial assignment. Generally speaking a stenographic position is one to which an employee advances.

Tests as we have attempted to administer them have been found confusing to the applicant and on the whole unsatisfactory as to results.

Personality and previous training are probably more important to us than technical skills--but we could probably use skill tests to advantage, although they are hard to administer under our setup.

I do not believe that students should be given special preparation with a view toward passing the tests administered in business. I believe they should be taught shorthand, typing, etc., and also be given instruction on how to conduct themselves in an office.

Since it is our belief that dictation given by the person requiring the new stenographer or secretary would be more in line with his requirements than dictation of a general nature given at the Employment Office, we follow this procedure after we find that the typing and NOMA tests are satisfactory.

A testing program must be a realistic measure of job demands extending from lowest to highest level skills in accordance with a well-integrated wage and salary program.

Preparation should be given to students to take tests in general--not to become nervous, but to relax, accept testing, and made to realize that their future does not depend on tests results. The students should also be acquainted with all types of machines so that the machine they are tested on will not adversely affect them.

In my opinion, tests help to measure objectively an applicant's present mental ability, temperament, and proficiency in typing (these three areas being the only ones covered by tests). Of greatest importance is the past performance record as a very valid prediction of future performance ability. Such information is determined by interviews after consulting schools and previous employers. Factors of the greatest importance include attitude, integrity, character, and dependability.

Tests definitely are only one of the factors which should be used in the selection of a stenographic applicant. I do not understand why colleges do not teach personality, courtesy, and job attitude. There is a definite need for this in all college courses.

Tests are helpful indicators but should never be considered totally conclusive. Combined with a good interview and a complete check of the past records, they serve to give a more complete picture of the applicant.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The problem of the study was to determine the testing and employment procedures used for the initial employment of stenographers in some of the leading business firms in the Boston area. The data obtained should be helpful to business teachers and to business firms interested in improving their employment procedures.

In order to obtain data for this study, 160 survey check lists were mailed to the personnel directors of business firms employing 500 or more wage earners in the Boston area. The information was returned by 98, or 61 per cent, of the business firms to whom the check lists were mailed.

The following facts were determined and conclusions formulated from the data obtained by the survey:

1. Of the 98 business firms returning the check list, 47, or 48 per cent, used formal tests in determining the employment of stenographers, while 45 firms did not use formal tests. The percentage of firms using tests increased as the number of wage earners employed reached 400 or more.
2. Eighty-one of the business firms selected their applicants for stenographic positions

by means of the schools, 76 by means of applications and recommendations by other company employees, 67 by employment agencies, 66 through recommendations of friends, and 51 firms made their selection by means of newspaper advertisements.

3. The tabulation of the type tests given by the firms reporting the use of tests for determining stenographic employment showed that there was no particular sequence of tests given by any number of firms. The tabulation showed that only two firms gave the same type tests, namely, a Clerical Aptitude Test and an Intelligence Test.
4. As for the subjects included in the tests, typing was on top of the list with 60 firms using this subject. Close behind typing was shorthand transcription with 53 firms reporting the use of this subject. The other subjects mentioned in the order of frequency were spelling, vocabulary, English and grammar, business math, filing, office machines, and book-keeping.
5. There seemed to be a steady increase in the number of business firms introducing the use of tests as a means of determining employment.

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The period of 1946 to 1950 showed that 26 per cent of the business firms replying to this question introduced the use of tests during those years.

6. Not only did 53 per cent of the firms state that the company-made tests have been revised since they were introduced, but 30 per cent of the firms stated that changes were being considered for the company-made tests.
7. In general the business firms did place a time limit on the taking of the tests, but there were no definite answers given to how much time was allowed for taking the tests.
8. Of the business firms replying to whether or not the applicant is allowed to take another battery of tests upon failing the first battery administered, 50 per cent of the business firms replied in the affirmative.
9. The majority of the business firms did not set any requirements as to how long an applicant must wait before a second battery of tests could be taken.
10. The standards of the employment tests and those standards required on the job were considered the same by over 50 per cent of the firms replying.

11. The employment interview was considered the chief factor in the selection of applicants for the stenographic positions.
12. Thirty-six per cent of the business firms reported that a great deal of emphasis was placed upon the results of the tests, and 26 per cent placed at least some emphasis upon the results of the tests in determining the employment of stenographers. Only 2 per cent of the business firms replying to this question stated that very little emphasis was placed upon tests and the results.
13. Even though at least some emphasis was placed upon test results, no business firms reported that employment of stenographers was determined only by means of the test results. The greatest percentage, over 50 per cent, of the business firms determined employment by means of the test results, interview, school record, and references.
14. As far as to what extent the results of tests were successful in predicting the quality of work of the stenographic applicant, the greatest percentage of the business firms reported that the results were only considered to some extent.

15. In spite of the fact that about 48 per cent of the firms reported the use of formal tests in determining the employment of stenographers, the following factors were considered very important in regard to their classification in considering stenographic applicants for employment: recommendation of the school, recommendation of the references, and tests designed by the company. Clerical aptitude tests, intelligence tests, and personality tests were the types of tests considered very important by the greatest percentage of the business firms.
16. The findings disclosed that most offices in this area have no definite testing program beyond the dictation of several short letters to the applicant to be transcribed immediately and the use of a speed test in typewriting.
17. It was significant to note that a number of the firms were anxious to discover if their own testing practices paralleled those of the other business firms in this area.

Recommendations For Improving The Employment Procedures
And Teaching Methods Used By Teachers

As a result of this survey the following recommendations are submitted on the testing and employment procedures used for the initial employment of stenographers:

1. More companies should make use of the numerous standardized tests available in determining the employment of stenographers.
2. In view of the fact that intelligence tests were administered by many concerns and that in some cases much weight was placed on the results of these tests, teachers of business subjects should guide their students in the acquisition of general knowledge as well as technical skills.
3. Since many companies were interested in accurate as well as rapid typists, it may be that teachers should place emphasis on both factors so that the end result will be both an accurate and rapid typist.
4. School recommendations were rated high on the list as a means of selecting the applicants. Care, therefore, should be taken by the teachers writing recommendations for their students.

5. In preparing the students for the examination given by the business firms, the teachers should help the students to become more competent in the fields of typing, shorthand transcription, spelling, vocabulary, and English grammar since these subjects were included in the majority of the tests given by the business firms.
6. Since the majority of the business firms based the employment of stenographers chiefly on the employment interview, the students should receive training while in school on how to conduct themselves in an interview.
7. The results of the personality tests were considered very important in considering stenographic applicants for employment. Some attempt should be made by the schools to introduce a course dealing with personality.
8. In order that a more comprehensive picture of the testing procedures used for the initial employment of stenographers in the leading business firms could be obtained, a similar survey should be conducted in other areas of the United States rather than limit the study to one particular section of the country.

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APPENDIX

48

BOSTON UNIVERSITY
SCHOOL OF EDUCATION
332 BAY STATE ROAD
BOSTON 15, MASSACHUSETTS

48

Under the direction of Professor Lester I. Sluder of Boston University, I am conducting a survey of the testing procedures used for the initial employment of stenographers in the leading business firms in the Boston area.

By means of a careful study of the procedures used in testing, we hope to improve our teaching and in that way produce better stenographic students for business. This study will also provide valuable information to the businessman in producing a means of comparing various testing procedures used by the leading business firms in the Boston area in their selection of stenographers.

The enclosed check list has been arranged for easy checking and will require only a few minutes to complete. Even if very few of the practices contained in the check list are carried on in your company, please do not hesitate to return it for this information will be of value in this study. All of the replies will be kept confidential, and the results will appear in tabulated form only.

Will you please complete the enclosed check list, slip it into the enclosed self-addressed envelope, and return it to me as soon as possible. The Chairman of the Research Committee of the Boston Chapter of the National Office Management Association has examined the check list and suggests that it be given wholehearted support.

I wish to thank you in advance for your co-operation in this survey.

Sincerely yours,

(Miss) Irene L. Roman
9 Stanley Street
Dorchester 25, Massachusetts

ILR
Enclosures 2

SURVEY OF THE TESTING PROCEDURES USED FOR INITIAL EMPLOYMENT
OF STENOGRAPHERS

GENERAL INFORMATION

Name of the company: _____ Date: _____

Address: _____

Type of business: _____

Your name and title: _____

Total number of permanent office workers in the company:

_____ Men _____ Women

SELECTION OF APPLICANTS FOR STENOGRAPHIC POSITIONS

A. Indicate by the use of a check mark in the space provided at the left the method used in selecting the applicants for stenographic positions:

- _____ 1. Schools
- _____ 2. Employment agencies
- _____ 3. Newspaper advertisements
- _____ 4. Recommended by friends
- _____ 5. Recommended by company employees
- _____ 6. Application
- _____ 7. Others _____

TESTS USED FOR INITIAL FULL-TIME EMPLOYMENT OF STENOGRAPHERS

A. Are formal tests used in determining employment of stenographers? _____ Yes _____ No

B. 1. Check the type of tests used and indicate the name and author of the tests:

TYPE OF TEST	NAME AND AUTHOR
_____ a. Achievement test	_____
_____ b. Aptitude test	_____
_____ c. Clerical aptitude test	_____
_____ d. Intelligence test	_____
_____ e. Interest test	_____
_____ f. Mechanical aptitude test	_____
_____ g. Personality test	_____
_____ h. Reading test	_____
_____ i. Company-made test	_____
_____ j. Others _____	_____
_____	_____
_____	_____

2. Check the following subjects which are included in your tests:

- | | |
|---|---|
| <input type="checkbox"/> a. Bookkeeping | <input type="checkbox"/> g. Business Math |
| <input type="checkbox"/> b. Shorthand transcription | <input type="checkbox"/> h. Economics |
| <input type="checkbox"/> c. Typing | <input type="checkbox"/> i. English and grammar |
| <input type="checkbox"/> d. Office machines | <input type="checkbox"/> j. Spelling |
| <input type="checkbox"/> e. Filing | <input type="checkbox"/> k. Vocabulary |
| <input type="checkbox"/> f. Business Law | <input type="checkbox"/> l. Others _____ |

- C. How many different types of tests are given to the applicant for a stenographic position? Number _____
- D. When was the use of tests introduced as a criteria for determining the employment of stenographers? Year _____
- E. Have the company-made tests been revised since you began using them? Yes No
- F. Is any change being considered for these company-made tests? Yes No
- G. Who administers the tests to the applicants for the stenographic positions? _____
(Position held)
- H. Is the applicant given a definite time limit for completing the battery of tests for stenographic employment? Yes No
If so, how long? _____
- I. If the applicant fails the first battery of tests given, is he allowed to take another battery of tests for stenographic employment? Yes No
- J. If the applicant is allowed to take another battery of tests, how long must he wait before he can take the tests again? _____
- K. Are the employment test standards for initial employment of stenographers the same as the standards required on the job?
 Yes, the standards are the same.
 No, the employment test standards are higher.
 No, the on-the-job standards are higher.

RESULTS OF THE TESTS GIVEN FOR THE EMPLOYMENT OF STENOGRAPHERS

- A. Is employment of stenographers based chiefly on the employment interview? Yes No
- B. How much emphasis is placed upon the results of the tests in determining employment of stenographers? (Check one)
 Great deal Some Very little

- C. The employment of stenographers is determined by: (Check one)
- 1. Results of tests only.
 - 2. Results of tests and interview.
 - 3. Results of tests, interviews, and school records.
 - 4. Results of tests, interviews, school record, and references.

D. To what extent do you believe the results of the test are successful in predicting the quality of work of the stenographic applicant?

Great extent Some extent Very little

E. What type of tests work best for your company in predicting success on the job of the stenographic applicant?

F. How would you classify the results of the following factors in considering a stenographic applicant for employment?
(Place a check mark in the proper column)

FACTOR	VERY IMPORTANT	MODERATELY IMPORTANT	LITTLE OR NO IMPORTANCE
1. Achievement test			
2. Aptitude test			
3. Clerical aptitude test			
4. Individual subject-matter test.			
5. Intelligence test			
6. Interest test			
7. Mechanical aptitude test.			
8. Personality test.			
9. Reading test.			
10. Test designed by the company.			
11. Recommendation of interviewer			
12. Recommendation of school.			
13. Recommendation of references.			
14. Other recommendations			

COMMENTS AND SUGGESTIONS

A. Please use this sheet for additional comments or suggestions you wish to make that would help teachers in the preparation of students for the tests administered in business.

FOLLOW-UP CARD

Do you have a few minutes to spare?

Why not complete and return the check list "A Survey of the Testing Procedures Used in the Initial Employment of Stenographers," which I mailed to you recently if you have not already done so?

REMEMBER--I need YOUR contribution to the picture! Thank you!

Irene L. Roman
9 Stanley Street
Dorchester 25, Massachusetts

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BUSINESS FIRMS USED IN THIS SURVEY

Abbott Worsted Company
Main Street
Graniteville, Massachusetts

Allis-Chalmers Manufacturing Co.
1344 Hyde Park Avenue
Boston, Massachusetts

American Mutual Liability Insurance Company
142 Berkeley Street
Boston 16, Massachusetts
(Mr. Chester W. Higgins)

American Optical Company
14 Mechanic Street
Southbridge, Massachusetts

American Sugar Refining Company
47 Granite Street
Boston 10, Massachusetts
(Mr. Thomas F. Nolan)

American Woolen Company
Shawsheen Mill
Haverhill Street
Andover, Massachusetts
(Mrs. Francis J. Rodericks)

Ames Worsted Company
Crosby Street
Lowell, Massachusetts

Armstrong Cork Company
Hancock Street
South Braintree

Bachmann Uxbridge Worsted Corporation
Lowell Mills
178 Mendon Street
Uxbridge, Massachusetts

Walter Baker Chocolate and Coca Division
General Foods Corporation
Pierce Square
Dorchester, Massachusetts

54
A. S. Beck Shoe Corporation
16 Walnut Street
Haverhill, Massachusetts

Beggs & Cobb, Inc.
76 South Street
Boston, Massachusetts

Bethlehem Steel Company
97 East Howard Street
Quincy, Massachusetts

Bird & Son, Inc.
East Walpole
Massachusetts
(Mr. Edgar M. Grout)

The Bolta Company
151 Canal Street
Lawrence, Massachusetts
(Mr. William L. Wagner)

Boston Consolidated Gas Co.
100 Arlington Street
Boston, Massachusetts
(Mr. Ray D. Roley)

Boston Edison Company
39 Boylston Street
Boston 12, Massachusetts
(Mr. Arthur J. McEachern)

Boston Gas & Fuel Association
250 Stuart Street
Boston, Massachusetts
(Mr. Allan C. Johnson)

Boston Gear Works
The Murray Division
14 Hayward Street
North Quincy 71, Massachusetts
(Mr. Wilbur F. Weeks)

Boston Herald-Traveler Corporation
80 Mason Street
Boston, Massachusetts

Boston Woven Hose & Rubber Company
P. O. Box 1071
Boston 3, Massachusetts.
(Mr. W. T. Dwyer)

55
Godfrey L. Cabot, Inc.
77 Franklin Street
Boston 10, Massachusetts
(Mr. Paul H. Lesure)

A. S. Campbell Company, Inc.
161 Prescott Street
East Boston 28, Massachusetts
(Mr. Allan M. MacLeod)

The Carter's Ink Company
239 First Street
Cambridge 42, Massachusetts
(Mr. T. E. Martin)

The William Carter Company
963 Highland Avenue
Needham Heights 94, Massachusetts
(Mr. Enos G. Nickerson)

Christian Science Publishing Society
1 Norway Street
Boston 15, Massachusetts
(Mr. Franklin H. Smith)

Clifford Manufacturing Company
152 Grove Street
Waltham 54, Massachusetts
(Mr. Victor A. Wolff)

Coca-Cola Bottling Company
400 Soldiers Field Road
Allston, Massachusetts

Commonwealth Shoe and Leather Company
Marble Street
Whitman, Massachusetts

Consolidated Electric Lamp Company
600 Broad Street
Lynn, Massachusetts

Converse Rubber Corporation
392 Pearl Street
Malden, Massachusetts

Courier Citizen Company
165 Jackson Street
Lowell, Massachusetts

Daggett Chocolate Company
400 Main Street
Cambridge, Massachusetts

Dennison Manufacturing Company
Howard Street
Framingham, Massachusetts
(Mr. Judah H. Humphrey)

Dewey & Almy Chemical Company
62 Whittemore Avenue
Cambridge 40, Massachusetts
(Mr. J. W. Miller)

Diamond Shoe Corporation
72 Howe Street
Marlboro, Massachusetts

John Donnelly & Sons
3134 Washington Street
Boston 19, Massachusetts
(Mr. John H. O'Neil)

Draper Corporation
25 Hopedale Street
Hopedale, Massachusetts

Eastern Racing Association, Inc.
200 Berkeley Street
Boston, Massachusetts

Employers Liability Assurance Corporation, Limited
110 Milk Street
Boston 9, Massachusetts
(Mr. Richard S. Ostberg)

Factory Mutual-Engineering Division
184 High Street
Boston 10, Massachusetts
(Mr. Lawrence D. Copeland)

Farrington Manufacturing Company
76 Atherton Street
Jamaica Plain 30, Massachusetts
(Miss Estelle L. Hobart)

Federal Reserve Bank of Boston
30 Pearl Street
Boston 6, Massachusetts

57
William Filene's Sons Company
426 Washington Street
Boston 1, Massachusetts
(Mr. Alva F. Kindall)

The First National Bank of Boston
67 Milk Street
Boston 6, Massachusetts

First National Stores, Inc.
5 Middlesex Avenue
Somerville, Massachusetts
(Mr. Edward E. Kuypers)

Forbes Lithograph Manufacturing Company
Forbes Street
Chelsea, Massachusetts

Ford Motor Company
183 Middlesex Avenue
Somerville 45, Massachusetts

The Foxboro Company
Foxboro
Massachusetts

Robert Gair Company, Inc.
170 Fawcett Street
Cambridge, Massachusetts

General Baking Company
62 Bunker Hill Street
Boston, Massachusetts

General Electric Company
920 Western Avenue
Lynn, Massachusetts

General Motors Corporation
Western Avenue
Framingham, Massachusetts

General Radio Company
275 Massachusetts Avenue
Cambridge 39, Massachusetts

General Seafoods
Division of General Foods Corporation
1 Fish Pier
Boston 10, Massachusetts
(Mr. George B. Field)

Gillette Safety Razor Company
15 West First Street
South Boston 6, Massachusetts
(Miss Kathryn Tobin)

Ginn and Company
Statler Building
Boston, Massachusetts

Globe Newspaper Company
242 Washington Street
Boston, Massachusetts

Green Shoe Manufacturing Company
960 Harrison Avenue
Boston, Massachusetts

John Hancock Mutual Life Insurance Company
200 Berkeley Street
Boston 17, Massachusetts
(Mr. William P. Nelson)

Hardware Mutuals
31 St. James Avenue
Boston 16, Massachusetts
(Mr. Geoffrey C. Beckingham)

Harvard University
30 Weld Hall
Cambridge 38, Massachusetts
(Mr. John W. Teele)

Hathaway Bakeries, Inc.
44 Life Street
Brighton 35, Massachusetts
(Mr. John F. Higgins)

Hayes-Bickford, Inc.
32 Garrison Street
Boston 16, Massachusetts
(Mr. Roy Mason)

The Hearst Corporation
5 Winthrop Square
Boston, Massachusetts

Holtzer-Cabot, Inc.
Division, National Pneumatic Company, Inc.
125 Amory Street
Boston, Massachusetts

H. P. Hood & Sons
500 Rutherford Avenue
Charlestown 29, Massachusetts
(Mr. W. Neil Chapman)

Hood Rubber Company
36 Nichols Avenue
Watertown 72, Massachusetts
(Mr. L. Clayton McKenney)

Houghton Mifflin Company
2 Park Street
Boston, Massachusetts

Hytron Radio & Electronics Corporation
76 Lafayette Street
Salem, Massachusetts

International Business Machines Corporation
573 Boylston Street
Boston 16, Massachusetts
(Mr. Frank N. McCabe)

Jenney Manufacturing Company
250 Boylston Street
Boston, Massachusetts

H. A. Johnson Company
155 North Beacon Street
Brighton 35, Massachusetts

Jordan Marsh Company
450 Washington Street
Boston 7, Massachusetts

George E. Keith Company
125 Perkins Avenue
Brockton, Massachusetts

The Kendall Company
140 Federal Street
Boston 10, Massachusetts
(Mr. H. Gilbert Francke)

Keystone Manufacturing Company
151 Hallet Street
Boston, Massachusetts

Knapp Brothers Shoe Manufacturing Corporation
70 Bellevue Avenue, Number 3
Brockton, Massachusetts

60
A. C. Lawrence Leather Company
10 Sawyer Street
Peabody, Massachusetts

Lever Brother Company
164 Broadway
Cambridge 39, Massachusetts
(Mr. William H. Briska, Jr.)

Lewis Shepard Company
125 Walnut Street
Watertown 72, Massachusetts
(Mr. Wilfred Dawes)

Liberty Mutual Insurance Company
175 Berkeley Street
Boston 17, Massachusetts
(Mr. E. Prentiss Jones)

The Linen Thread Company, Inc.
140 Federal Street
Boston, Massachusetts

John E. Lucey Company
31 Perkins Street
Bridgewater, Massachusetts

Lumbermen's Mutual Casualty Company
260 Tremont Street
Boston 16, Massachusetts
(Mrs. Helen H. Stevens)

M. K. M. Hosiery Company
117 Bickford Street
Jamaica Plain, Massachusetts
(Mr. Jerome S. Kornreich)

Macey-Fowler of Boston, Inc.
150 Causeway Street
Boston, Massachusetts

Massachusetts Hospital Service
38 Chauncy Street
Boston 11, Massachusetts
(Mr. Harry R. Healey, Jr.)

Massachusetts Institute of Technology
77 Massachusetts Avenue
Cambridge 39, Massachusetts
(Mr. R. Colin MacLaurin)

61
Massachusetts Mohair Plush Company
122 Western Avenue
Lowell, Massachusetts

Maverick Mills
144 Addison Street
East Boston, Massachusetts

Megowen-Educator Food Company
27 Jackson Street
Lowell, Massachusetts

Merrimac Hat Corporation
60 Merrimac Street
Amesbury, Massachusetts

Merrimac Manufacturing Company
Dutton Street
Lowell, Massachusetts

Monomac Spinning Company
500 Broadway
Lawrence, Massachusetts

Monsanto Chemical Company
Chemical Lane
Everett 49, Massachusetts
(Mr. Thomas J. Diviney)

Leopold Morse Company
137 Washington Street
Boston, Massachusetts

Mutual Boiler & Machine Insurance Company
50 Batterymarch Street
Boston 10, Massachusetts
(Mr. Rutherford Harris)

Mutual Shoe Company
135 Maple Street
Marlboro, Massachusetts

Naumkeag Steam Cotton Company
47 Congress Street
Salem, Massachusetts

New England Confectionery Company
254 Massachusetts Avenue
Cambridge 39, Massachusetts
(Mr. Frank R. Webb)

62
 New England Mutual Life Insurance Company
 501 Boylston Street
 Boston 17, Massachusetts
 (Mr. Dean E. Cogswell)

New England Telephone & Telegraph Company
 185 Franklin Street
 Boston 9, Massachusetts
 (Mr. Robert Russell)

Newmarket Manufacturing Company
 246 Market Street
 Lowell, Massachusetts

Newton-Waltham Bank & Trust Company
 93 Union Street
 Newton Centre 59, Massachusetts

Northeast Airlines, Inc.
 239 Prescott Street
 East Boston 28, Massachusetts
 (Mr. Robert H. Kerr)

Norwood Press Company
 932 Washington Street
 Norwood, Massachusetts

Pacific Mills
 140 Federal Street
 Boston, Massachusetts

Parkard Mills, Inc.
 Webster
 Massachusetts

Revere Sugar Refinery
 333 Medford Street
 Charlestown, Massachusetts

Gorton Pew Fisheries Company, Limited
 327 Main Street
 Gloucester, Massachusetts

S. S. Pierce Company
 133 Brookline Avenue
 Boston 17, Massachusetts
 (Mr. John D. Fox)

Plimpton Press
 Lenox Street
 Norwood, Massachusetts

63
 Plymouth Cordage Company
 North Plymouth
 Massachusetts
 (Mr. John W. Searles)

Plymouth Rubber Company, Inc.
 Revere Street
 Canton, Massachusetts

Pneumatic Scale Corporation, Limited
 65 Newport Avenue
 North Quincy, Massachusetts

The Polaroid Corporation
 739 Main Street
 Cambridge, Massachusetts
 (Mr. Arnold S. Judson)

Post Publishing Company
 250 Washington Street
 Boston, Massachusetts

Raytheon Manufacturing Company
 Foundry Avenue
 Waltham 54, Massachusetts
 (Mr. Leslie E. Woods)

Regal Shoe Company
 401 South Avenue
 Whitman, Massachusetts

Rexall Drug Company
 43 Leon Street
 Boston 15, Massachusetts
 (Mr. Allen W. Boyd)

Roxbury Carpet Company
 2 Central Street
 Saxonville, Framingham
 Massachusetts

Rust Craft Publishers, Inc.
 1000 Washington Street
 Boston 18, Massachusetts
 (Mr. Alfred E. Heubach)

Ruth Shoe Company
 44 Merrimac Street
 Newburyport, Massachusetts

64
Saco-Lowell Shops
60 Batterymarch Street
Boston 10, Massachusetts
(Mr. Roger Sherman)

W. F. Schrafft & Sons Corporation
529 Main Street
Charlestown, Massachusetts

Sears Roebuck & Company
201 Brookline Avenue
Boston 15, Massachusetts
(Mr. Grant Sheetz)

The Second National Bank of Boston
111 Franklin Street
Boston 6, Massachusetts

Shell Oil Company
441 Stuart Street
Boston 15, Massachusetts

Simplex Wire & Cable Company
79 Sidney Street
Cambridge 39, Massachusetts
(Mr. Kenneth R. Bolles)

Socony-Vacuum Oil Company
648 Beacon Street
Boston, Massachusetts
(Mr. Russell Tompkins)

Sonoco Products Company
52 Perkins Street
Lowell, Massachusetts

Southwell Combing Company
Middlesex Street
North Chelmsford, Massachusetts

John P. Squire Company
P. O. Box 553
Boston 2, Massachusetts
(Mr. E. M. Brock)

Standard-Thomson Corporation
152 Grove Street
Waltham, Massachusetts

65
Star Market Company
283 Walnut Street
Newtonville 60, Massachusetts
(Mr. Earl B. Webb)

M. T. Stevens & Sons Company
Stevens Street
North Andover, Massachusetts

Stop & Shop, Inc.
393 D Street
Boston 10, Massachusetts
(Mr. J. David Fine)

Storrs & Bement Company
282 Congress Street
Boston, Massachusetts

Sylvania Electric Products, Inc.
70 Forsyth Street
Boston 15, Massachusetts
(Mr. Robert E. Hogan)

Telechron, Inc.
Homer Avenue
Ashland, Massachusetts

Judson L. Thompson Manufacturing Company
Sawer Road
Waltham, Massachusetts

Towle Manufacturing Company
260 Merrimac Street
Newburyport, Massachusetts

Transducer Corporation
1085 Commonwealth Avenue
Boston 15, Massachusetts
(Mr. John E. Lowe)

Trimount Clothing Company, Inc.
18 Station Street
Boston, Massachusetts

Tubular Rivet and Stud Company
Weston Avenue
Wollaston, Massachusetts

66
Tyer Rubber Company
Railroad Avenue
Andover, Massachusetts

United Elastic Corporation
Payson Avenue
Easthampton, Massachusetts

United Shoe Machinery Corporation
140 Federal Street
Boston 7, Massachusetts
(Mr. Robert B. Whitcomb)

United States Bobbin & Shuttle Company
135 Bradford Street
Lawrence, Massachusetts

United-Carr Fastener Corporation
31 Ames Street
Cambridge 42, Massachusetts
(Mr. William A. Nye)

Waltham Watch Company
221 Crescent Street
Waltham, Massachusetts

Walworth Company
800 East First Street
South Boston 27, Massachusetts
(Mr. H. V. Chisholm)

Western Electric Company
Hayes Building
Haverhill, Massachusetts

Westinghouse Electric Corporation
Damon Street
Hyde Park, Massachusetts
(Mr. G. E. Closson)

R. H. White Corporation
518 Washington Street
Boston 11, Massachusetts
(Mr. Mitchell C. Lilley)

Whiting Milk Company
40 Cambridge Street
Charlestown 29, Massachusetts
(Mr. George O. Stinson)

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William Whitman Company, Inc.
500 Broadway
Lawrence, Massachusetts

Winslow Brothers & Smith Company
248 Summer Street
Boston, Massachusetts

Winston Shoe Company
28 Goodhue Street
Salem, Massachusetts

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BUSINESS FIRMS USING FORMAL TESTS

American Mutual Liability Insurance Company
142 Berkeley Street
Boston 16, Massachusetts

American Optical Company
14 Mechanic Street
Southbridge, Massachusetts

Armstrong Cork Company
Hancock Street
South Braintree, Massachusetts

The Bolta Company
151 Canal Street
Lawrence, Massachusetts

Boston Consolidated Gas Company
100 Arlington Street
Boston, Massachusetts

Boston Gas & Fuel Association
250 Stuart Street
Boston, Massachusetts

Boston Herald-Traveler Corporation
80 Mason Street
Boston, Massachusetts

The Carter's Ink Company
239 First Street
Cambridge 42, Massachusetts

Consolidated Electric Lamp Company
600 Broad Street
Lynn, Massachusetts

Courier Citizen Company
165 Jackson Street
Lowell, Massachusetts

Dennison Manufacturing Company
Howard Street
Framingham, Massachusetts

Dewey & Almy Chemical Company
62 Whittemore Avenue
Cambridge 40, Massachusetts

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Employers Liability Assurance Corporation, Limited
110 Milk Street
Boston 9, Massachusetts

Federal Reserve Bank of Boston
30 Pearl Street
Boston 6, Massachusetts

The First National Bank of Boston
67 Milk Street
Boston 6, Massachusetts

First National Stores, Inc.
5 Middlesex Avenue
Somerville, Massachusetts

Gillette Safety Razor Company
15 West First Street
South Boston 6, Massachusetts

John Hancock Mutual Life Insurance Company
200 Berkeley Street
Boston 17, Massachusetts

Hardware Mutuals
31 St. James Avenue
Boston 16, Massachusetts

H. P. Hood & Sons
500 Rutherford Avenue
Charlestown 29, Massachusetts

Hood Rubber Company
36 Nichols Avenue
Watertown 72, Massachusetts

International Business Machines Corporation
573 Boylston Street
Boston 16, Massachusetts

Jenney Manufacturing Company
250 Boylston Street
Boston, Massachusetts

H. A. Johnson Company
155 North Beacon Street
Brighton 35, Massachusetts

Keystone Manufacturing Company
151 Hallet Street
Boston, Massachusetts

Knapp Brothers Shoe Manufacturing Corporation
70 Bellevue Avenue
Brockton, Massachusetts

Lever Brothers Company
164 Broadway
Cambridge 39, Massachusetts

Liberty Mutual Insurance Company
175 Berkeley Street
Boston 17, Massachusetts

Lumbermen's Mutual Casualty Company
260 Tremont Street
Boston 16, Massachusetts

Massachusetts Hospital Service
38 Chauncy Street
Boston 11, Massachusetts

Merrimac Hat Corporation
60 Merrimac Street
Amesbury, Massachusetts

Merrimac Manufacturing Company
Dutton Street
Lowell, Massachusetts

New England Mutual Life Insurance Company
501 Boylston Street
Boston 17, Massachusetts

New England Telephone & Telegraph Company
185 Franklin Street
Boston 9, Massachusetts

The Polaroid Corporation
730 Main Street
Cambridge, Massachusetts

Raytheon Manufacturing Company
Foundry Avenue
Waltham 54, Massachusetts

Saco-Lowell Shops
60 Batterymarch Street
Boston 10, Massachusetts

Sears Roebuck & Company
201 Brookline Avenue
Boston 15, Massachusetts

71
Simplex Wire & Cable Company
79 Sidney Street
Cambridge 39, Massachusetts

M. T. Stevens & Sons Company
Stevens Street
North Andover, Massachusetts

Stop & Shop, Inc.
393 D Street
Boston 10, Massachusetts

Sylvania Electric Products, Inc.
70 Forsyth Street
Boston 15, Massachusetts

Transducer Corporation
1085 Commonwealth Avenue
Boston 15, Massachusetts

Tubular Rivet and Stud Company
Weston Avenue
Wollaston, Massachusetts

Tyer Rubber Company
Railroad Avenue
Andover, Massachusetts

Walworth Company
800 East First Street
South Boston 27, Massachusetts

Westinghouse Electric Corporation
Damon Street
Hyde Park, Massachusetts